CCTV MULTI-TESTER

TEST-009 / TEST-010 / TEST-011 / TEST-012

User's Manual

V1.0 01 / 2014

Welcome

Thank you for purchasing the **handheld CCTV Multi-tester**.

This user's manual is designed to be a reference tool for the installation and operation of your system.

Here you can find information about the corresponding tester model's features and functions, as well as detailed instructions on how to operate the device.

Before you operate the device please read the following safeguards and warnings carefully!

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1. Safety information

Notice

- The tester is intended for use in compliance with the electrical usage regulations.
- To prevent the functional decline or failure of the tester, the product should not come in contact with water.
- Any exposed part of the tester should not come into contact with either the dust and/or liquid.
- During transportation and use, it is highly recommended to avoid any violent collision and vibration of the tester. This is due to the possibility of the tester becoming damaged both externally and also the internal components, which will cause operational failure.
- **The tester should not be charged for any longer than 8 hours. It may raise the device's temperature to levels where its internal components could become damaged. If the battery is severely hot to touch, the tester should be powered off from the electric source IMMEDIATELY.**
- Do not use the tester in high humidity environments. If the tester becomes damp, power off immediately and disconnect any attached cables.
- The tester should not be used in an environment where flammable gas is present.
- Do not disassemble the instrument since no component inside can be repaired by the user.
- The instrument should not be used within an environment that contains strong electromagnetic interference.
- Do not use a detergent to clean device, only use a dry cloth. If the dirt is not easy to remove, a soft cloth with water or neutral detergent can be used. Please make sure no excessive water is contained within the cloth before applying to the dirt on the device.

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- Before using, you must select the correct input jack, function and range.
- Never exceed the protection limit values indicated in specifications for each measurement range.
- When the meter is linked to a measurement circuit, do not touch the unused terminals.
- Do not measure voltage if the voltage on the terminals exceeds 660V above earth ground.
- At the manual range, when the value scale to be measured is unknown beforehand, set the range selector at the highest position.
- Always be careful when working with voltages above 60V DC or 40V AC, keep fingers behind the probe barriers while measuring.
- **Never connect the meter with any voltage source while the function switch is in the current, resistance, capacitance, diode, continuity, otherwise it will damage the meter.**
- Never perform capacitance measurements unless the capacitor to be measured has been discharged fully.
- Never measure any resistance, capacitance, diodes or continuity measure on live circuits.

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2. Introduction

2.1 General

The new CCTV tester is developed for the On-Site installation and maintenance of IP & analog camera, and network devices. It also displays the connected Video feeds, to check for strength and clarity of signal. Other main features include; PTZ controls, DC12v output power, audio testing, Color generator, RS 485 Data searching and Cable testing (available on all tester models).

In addition to these main features we have developed improved functions that include POE power supply testing, PING testing, IP address scan, Video screen shot, Video record, Image magnification, Port flicker, Cable search, LED torch and more. The new tester also has built in TDR cable testing, which was specially designed for BNC cable testing within a security monitoring system. This function can accurately measure BNC and network cable's break points and short-circuit locations. The easy operation and portability of the design improves work efficiency by reducing time in the field. This makes it simple for a CCTV technician or installer to install and maintain a full spectrum of CCTV systems.

2.2 Function

2.2.1 Video signal testing

- The new CCTV tester has a built-in high definition 3.5"LCD-TFT 480（RGB）x320 full-view display screen, easy and directly displays the camera image quality. Supports PAL/NTSC

- LCD screen brightness/Contrast/Color Saturation adjustable. Suitable for field construction and maintenance work.

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2.2.2 Video signal level test

- Test video signal strength attenuation; having a long cable length will cause the image clarity to be too low, and will also reduce the image's dynamic range. On the other end of the spectrum if the video signal is too strong (not considering the length of the cable) it will cause a virtual shadow to appear, and will reduce the sharpness of the image.

- It can also check real-time display the video level value. If it is out of range, an attention message will be display in the screen.

2.2.3 PTZ controller

- The tester will display the input video images from a PTZ camera. It will also provide you with the ability to Pan/tilt the PTZ unit and zoom in/ out the image. To help you to setup the camera to the most appropriate values you can set the controlling parameters like protocol, communication port, baud rate, PTZ ID, pan/tilt speed; set and call preset position.

2.2.4 Enhanced Color bar generator

- Video Generating; the PAL/NTSC multi-system color bar video generator is an eight-system switchable, which can transmit/receive eight-system colorful images. When receiving the video color bar to test whether or not the video channel can transmit normally, you are then able to judge whether the color is correct or not. Because of the transmission loss or interference, it is suitable to carry out video transmission for field testing (testing the optical video transmitter and receiver, video cable, etc.).

- The new function color bar can test to see if there is any discernable image shift.

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- Produces a colored bar (red, green, blue, white, black) test the monitor whether have white or black dot etc.

2.2.5 DC12V 1A output power

- Power the camera with a DC12V (1A) power output from the tester. This is helpful for demo and testing when a nearby power supply is not available.

2.2.6 Audio testing

- Test the audio input from pickup devices. Connect the tester and pickup device together using the audio cable.

2.2.7 Cable tester

- Test LAN cable or telephone cable.

- Connect LAN cable or telephone cable to the CCTV & cable tester and then the connecting status, cable type and the sequence of wires will be displayed on the tester's screen. It will also display the serial number of the cable tester kit.

2.2.8 PTZ controller

- Search the Control protocol code from the multifunction keyboard or the DVR by using the RS485 /RS232 interface, then test the PTZ control command data to see whether or not it has received an anomaly and RS485/RS232 data transmission.

  Screen displays 16 hexadecimal codes such as:

  PELCO-P：A0 00（Add） xx xxxxxx AF xx
  PELCO-D：FF 01（Add）xx xxxxxxxx

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2.2.9 PTZ address scanning

- Engineer will benefit from the fast search scanner to help find the ID of the PTZ camera.

2.2.10 Image magnification（10xZoom）

- Zoom into the image up to 10 times. You can scrutinise image quality by zooming in using either 1x、2x、3x、4x、5x、6x - 10X settings in the monitor and tester.

2.2.11 Video snapshot

- Capture the video image and save the current video frames as JPEG files.

2.2.12 Video record

- Record and save the current video on to the SD card.

2.2.13 Video playback

- Video image and record files are saved on to the SD card. Storage file directory can be created according to the date.

2.2.14 Cable scan (not available on the TEST-009 model)

- Send the specific signal, and then it will be easy to find the connected cable.

2.2.15 Port flicker

- The tester will send special signals to make the connected POE port flicker at a special frequency, which will enable the installers to easily and quickly find the connected Ethernet cable. This function can prevent the engineer from connecting cables into the wrong ports or disconnecting the non-corresponding cable to artificially interrupt the network connection.

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2.2.16 IP address scan

- In digital IP surveillance applications, if the IP camera's IP address is not clear or has been forgotten; the device cannot be used. The IP address scan can quickly search for the connected IP camera or other network device's IP addresses.

2.2.17 Link monitor

- To add an IP camera or other network device to the current network group, the new IP address must not be occupied; otherwise it will cause IP conflicts and stop the equipment from working normally. The link monitor can check if the newly set IP address is occupied or not.

2.2.18 PING test

- PING testing is the most conventional network debugging tools; it is used for testing if the connected IP camera or other network equipment's Ethernet port is working normally and the IP address is correct.

2.2.19 POE tester

- This feature can test the PoE voltage when the POE switch is supplying the POE power to IP camera. It can clearly display the power+ and power- on the Ethernet cable pins, each cable pin's voltage and the failure connection of cable pin series numbers.

2.2.20 Digital multimeter (not available on the TEST-009 model)

- The CCTV Tester has a built-in, highly stable and reliable, 33/4 digit (6600) digital multimeter. It is used to measure the DC and AC voltage, AC and DC current measurement, Resistance measurement, Continuity test, Diode measurements, Capacitance measurement, Auto/Manual measuring range switching, relative value measurement and locking .

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2.2.21 TDR break-point and short-circuit measurement (only available on the TEST-011 & TEST-012 models)

- TDR cable testing, which can accurately measure BNC cable, network cable, control cable break-point and short-circuits location.

2.2.22 Visual fault locator (only available on the TEST-012 model)

- Visual Fault Locator with a 650nm wavelength can emit red laser sources to test multi-mode and the single mode fiber's bending and breakage, as well as the continuous light-emitting & 1HZ, 2Hz modulating light output. It is an indispensable tool in fiber project constructing, fiber net-work maintaining, optical component manufacture and research.

2.2.23 LED torch

- This is useful for the engineer to install and maintain a security system at night or a location with a lack of luminescence (simple on and off button).

2.2.24 F1 & F2 User-defined shortcut keys

- The user-defined shortcut key is designed for improving the efficiency of the engineer's workflow.

2.2.25 Video level meter

- Use the high-frequency sampling and processing technology hardware to test the peak video signal, SYNC signal level, COLOR BURST and Chroma level more accurately.

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2.2.26 PEAK video signal level

- Measure the peak video signal. The video signal level is 1000±175mV in PAL format (NTSC format: 140±15IRE). If the levels are too low it will cause the image to dim. Reducing dynamic range; if the levels are too high it will lead to virtual shadow, reducing the definition of the image.

2.2.27 The SYNC signal level

- This will measure the amplitude of the video sync pulse, to determine if the video level is correct and that the coaxial cable has a good connectivity. Sync level range is 300 ± 35mV in PAL format (NTSC format: 40 ± 5IRE), if the level is too low it will cause the image to fracture or scroll; if the level is too high it will reduce the image color levels and dynamic range.

2.2.28 COLOR BURST Chroma level

- This will measure the camera color burst level to determine whether the coaxial cable transmission has the correct level of detail and color. Chroma standard level is 280mV in PAL format and is 40 IRE in NTSC format. If the Chroma level is low the color will become dark. If the color level is too low the details of monitor reception image will be lost and it may even become black and white. If the Chroma level is too high, the image detail and clarity will be affected. If the coaxial cable is too long it will reduce the Chroma level.

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2.3 Accessories

1. CCTV tester
2. DC5V 1.2～1.5A Power supply (with USB cable)
3. Cable test box or wire tracer
4. Lithium Ion Polymer Battery (3.7V DC 3000mAh)
5. BNC cable
6. RS485 cable
7. Multimeter test leads one pair of red and black (not available for the TEST-009 model)
8. Power cable
9. Audio cable
10. TDR alligator clamp (only available for the TEST-011 and TEST-012 models)
11. Safety cord
12. Tool bag
13. Instruction Manual

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2.4 Front Panel

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1		OSD menu
2		The charge indicator: Red light indicates that the battery is being charged. When the charging is complete, the indicator turns off automatically.
3		The data-transmission indicator: it lights red while the data is being transmitted
4		The data-reception indicator: it lights red while the data is being received
5		The power indicator: it lights green while the tester is powered on
6		Set key, press it to enter sub-menu to set the function parameters
7		Pressing for more than 2 seconds will turn on or off the device, short press to turn on or off the menu display
8		Confirm/Open : Confirm the setting of parameters by opening or enlarging the aperture
9		Return/Close : Return or cancel while setting parameters of the menu, close or decrease the aperture
10		Upward: Select the item which will be set or add the value of the parameter / Tilt the PTZ upward
11		User-defined key (User setting function, the default is “PTZ controller”)
12		LED Torch
13		Rightward: Enter the sub-menu or select the parameter whose value will be changed / add the value of the parameter / Pan the PTZ right
14		Voltage, current, resistance and capacitance measuring, continuity testing, diode testing
15		Downward: Select the item which will be set or reduce the value of the parameter / Tilt the PTZ downward
16		Leftward: Enter the sub-menu or select the parameter whose value will be changed / Reduce the value of the parameter / Pan the PTZ left
17		Video record

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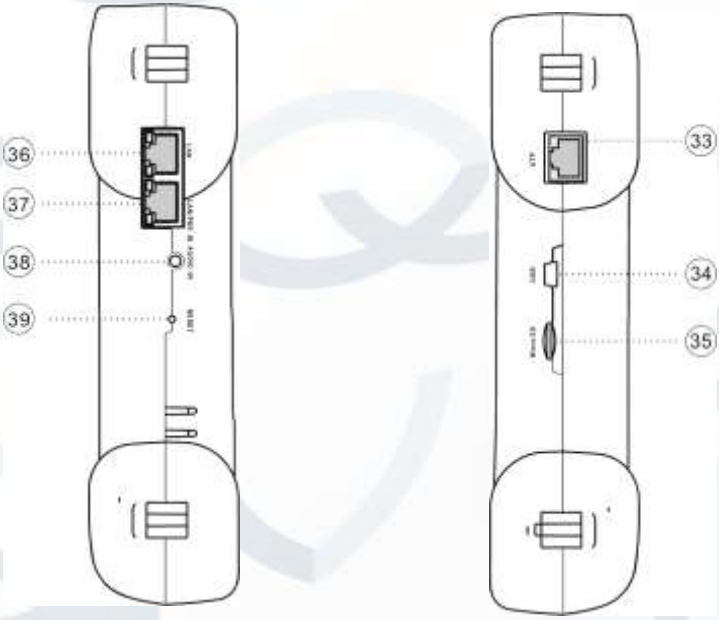
18		Snapshot (capture video image)
19		10x zoom the image display and video out
20	WIDE	WIDE: zoom out the image
21	NEAR	Near focus: Focus the image nearby
22		Far focus: Focus the image faraway
23	MODE	Menu key
24	TELE	TELE: zoom in the image



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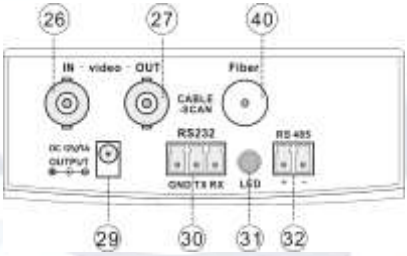
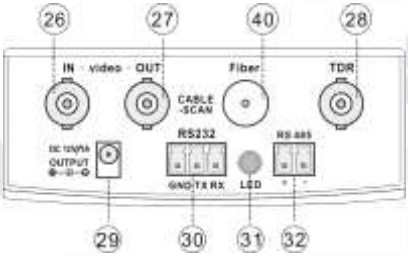
Without TDR testing



With TDR testing



26	Video input (BNC input interface): Inputs the video
27	Video output (BNC output interface): Outputs the video
28	TDR cable break point and short circuit test
29	Output DC12V1A power, for provisional DC test supply
30	RS232 interface: RS232 communication for the PTZ
31	LED torch
32	RS485/422 Interface: RS485/RS422 communication for the PTZ
33	Network cable /Telephone cable interface test
34	USB data /charge interface
35	Moveable MicroSD card
36	Ethernet power supply output/Network testing interface
37	Ethernet power supply input interface
38	Audio input: test the pickup and other audio equipments on the front-end
39	Reset the default settings of parameters
40	Optical power meter interface (Optional)
41	Visual Fault Locator with 650nm wavelength, can emit red laser sources to test multi-mode and single mode fiber's bending and breakage

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3. Operation

3.1 Installing the Battery

The tester has a built-in lithium ion polymer rechargeable battery.

Notice: The battery cable inside the battery cabin should be disconnected during transportation to ensure personal and device safety!

Prior to the use of the instrument, the battery cables inside the battery cabin should be well connected.

Usually you do not need to disconnect the cable during normal use. Pressing the key continuously can power on or off the tester.

Notice：Please use the device's original adaptor and cable.

When you use the device for the first time please make sure the batteries are completely exhausted and then recharged for 4 or 5 hours.

The Charge Indicator lights red when charging the battery, the charge indicator turns off automatically when the charging has been completed.

Notice: When the Charge Indicator turns off, the battery is approximately 90% charged. The charging time can be extended about 1 hour and the total charging time of within 8 hours will not damage the battery.

Notice: Press the RESET key at the left of the instrument to restore the default settings when the instrument works abnormally.

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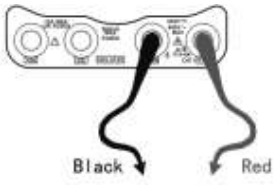
Multimeter: the red and black multimeter pen must insert the corresponding port.



3.2 Instrument connection

1. The camera or dome video output is connected to CCTV Tester VIDEO IN，the image display on the tester.

2. CCTV Tester “VIDEO OUT” interface connect to the Video input of monitor and optical video transmitter and receiver, the image display on the tester and monitor.

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3. Connect the camera or the speed dome RS485 controller cable to the tester RS485 interface ,(Note positive and negative connection of the cable).Support RS232 PTZ controller ,connect the RS232cable to RS232 interface of the tester

3.3 OSD Menu

- Press the key ⏻ to turn on device.
- Press the key again ⏻ to turn off device.
- Press the key ⏻ to enter the menu，Continuously press MODE quickly switch to the desired function menu page. Press this key anytime to enter the desired menu. The menu pages are represented by this graphic: ■ ▪ ▪ different square means different interface
- When turned on, press the MODE key, to enter the desired function menu page. Continuously press the ✣ keys, to select the desired function, and press the F1/W 5*/EN key to enter.
- In one of the various function modes, press the SET key to set the various parameter values.
- To hide the bar at the top of the screen containing the menu name, current time and battery level meter, whilst you are within a particular function option press the ⏻ key.

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First page menu

Second page menu

Third page menu

3.3.1 PTZ controller

Display the input video images. Press the SET key to enter the menus and set Parameters. Pan/tilt the P/T unit and zoom in/ out the image. Setup the controlling parameters like protocol, communication port, baud rate, PTZ ID, pan/tilt speed; set and call preset position.

Display the input image; press the ⏻ key if you wish to see the video in full screen mode. Press it again to bring it out of full screen mode.

Enter PTZ controller, if there is no video input, the screen display “No video input”.

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3.3.1.1 PTZ controller parameter setting

In the “PTZ CONTROLLER” mode (as shown on the previous page) press the SET key to enter the parameter setting.

Press the keys, move the yellow highlighted cursor to select.

Press the or key, change the parameter values. Then press the key to save and return.

If there is no change, Press the key to return to setting, and then press the key return the PTZ controller function.

A. Protocol

Use the up and down arrow keys to move the yellow cursor to the “**protocol** ”, set corresponding Protocol , Support more than thirty PTZ protocols. Such as Pelco-D, Samsung, Yaan, LiLin, CSR600, Panasonic, Sony-EVI, etc. Pelco is the most common protocol.

B. Port

Move the yellow cursor to “port”, select the communication port for the PTZ camera controlling (RS232/422/485).

C. Baud

Move the yellow cursor to “Baud”; select the baud rate according to baud rate of the PTZ camera (600/1200/2400/4800/9600/19200/57600/115200bps).

D. Address

Set the ID according to the ID of PTZ camera (0 ~ 254), the data setting address must be consistent with the speed dome address.

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E. Pan speed: Set the pan speed of PTZ camera (0 ~ 63)

F. Tilt speed: Set the tilt speed of PTZ camera (0 ~ 63)

G. Set PS (Set preset position)

Move the yellow cursor to “Set PS”, set and save preset position number (1 ~ 128) by press the keys to raise or lower the value, then press the key to save, Press to quit.

H. Call the preset position (Go PS)

Move the yellow highlighter cursor to “Set PS”, then Setup preset position (1~128), Press key or to accelerate the value changing.

Press the key to complete preset position setting or press return key to to quit.

Camera moves to the preset position immediately, Lens zoom, focus and iris is automatically changed to the preset parameters, preset the camera image displayed on the monitor.

Check and set the protocols, address, interface and baud. They must match the dome camera’s values. When the values match you will then be able to test and control the camera.

After setting the parameter, the tester can control the PTZ and lens, via these keys:

- Press the keys; to control the PTZ direction of rotation.

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◆ Press the keys; or to switch on or turn off the aperture. Press the keys; or adjust the focus manually.

◆ Press the keys; or manually adjust the zoom.

Tips：Preset position setting is saved within the PTZ domes. (Preset position can be set depending on the dome).

3.3.1.2 Menu of dome

Different makes of dome camera control systems can use different preset positions, please refer to the dome's camera manual to check camera's values. To view the PTZ dome camera's internal menu system via the tester device, firstly enter the PTZ controller parameter setting menu and then call preset position 64, the process break down is shown below:

1. Press the key to enter PTZ controller submenu.
2. Press the keys to select preset position 64.
3. Press the key Enter the main menu of the PTZ camera.

OSD Menu of Dome (For Reference only):

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4. After calling up the dome camera menu , Users can select different functions by using the arrow keys, the dome camera menu operation refers to the manual.

3.3.2 Color-bar generator (Image Generator)

1. Press the ENQUE key to enter the OSD menu.
2. Press the keys to select 'BAR' option BAR , and then press the ENTER key to enter.

Test the Color- bar generator; supports global PAL / NTSC standards.

This feature is available for testing and monitoring of transmission channels, such as optical video transmitter and receiver, video cables, etc. The "Video out" port can be connected with the sending port of the optical video transmitter, the "Video in" port can be connected to the receiving port.

1. Press the keys to move the cursor to either "Format", "LCD" or "Type".

2. Select "Format" and the tester will send the color bars from the "Video out" port. Press the key or to switch the video output formats.

3. When you select "LCD" press the or keys to switch the video color bar display to either input or output.

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4. The “Type” option will allow you the choice of seven different generated colors or test images, such as ”Color Bar”, “Red”, “Green”, “Blue”, “White”, “Black” and “Graph”. Use the keys to choose which test color/image you require.

5. Press the to turn off the menu, sending or receiving image to display full screen；

6. Press it again to display the Color bar generator menu.

7. In the “color bar generator” mode, output different standard color bar and it will be received by “Video IN” port. This will display the video input and output for you to check image color balance.

Application：

A. When performing maintenance on the dome camera, send the image from the tester to the monitoring center, by connecting the tester’s ‘Video-out’ port to the monitoring centre’s “Video-in” Port. If the monitoring center is receiving the image from the tester, it means that the Video transmission channel normal is normal; in addition, the monitoring center can judge the image quality through the received color bar to see if it is satisfactory enough.

B. Testing the optical video transmitter, transmission equipment, video cable, to see if it is sending and receiving color bars or not.

C. Sending the pure color bar (such as white and black color) to test the monitor to see whether or not it has bright or dark dots across the image.

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3.3.3 Video level meter (not available on the TEST-009 model)

Press or choose menu , and press to enter.

Uses high frequency sampling hardware and processing technology to test the Peak video signal, SYNC signal level, COLOR BURST and Chroma levels more accurately than other testers. When the tester receives the video signal, it will automatically measure the PEAK video signal level, the SYNC signal level and COLOBURST level and Chroma levels. While in PAL format, the unit will be ‘mV’, While in NTSC format, it will be ‘IRE’.

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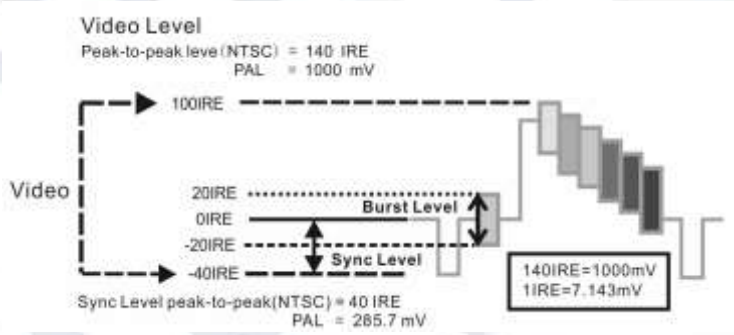

NTSC	Video signal level	140±15IRE
	Chroma level(COLOR BURST)	40±5IRE
	SYNC signal level	40±5IRE
PAL	Video signal level	1000±200mV
	chroma level(COLOR BURST level)	280±35mV
	SYNC signal level	280±35mV

PEAK video signal level: This Measures the peak video signal. The video signal level is set as 1000±175mV in PALformat (NTSC format :140±15IRE), if the level is too low it will cause the image to dim, reducing dynamic range. If the level is too high it will create a virtual shadow, which will reduce the definition of the image

The SYNC signal level: measuring the amplitude of the video sync pulse, for determinin g the video level is correct and the coaxial cable connectivity. Sync level range is 300 ± 35mV in PAL format (NTSC format: 40 ± 5IRE), the level is too low will cause the image to fracture or scroll; Level is too high will reduce the image color levels and dynamic range.

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COLOR BURST chroma level: Measures the camera color burst level, to determine whether the coaxial cable transmission for the best detail and color. Chroma standard level is 280mV in PAL format and is 40 IRE in NTSC format. When the Chroma level is low, the color will become dark. If the color level is too low, the details of monitor reception image will be lost, and may even become black and white. When the Chroma level is too high, the image will start to display image distortions and colour spots, which affects the image detail and clarity. A long coaxial cable, spanning the connection from the camera to the recorder/tester, will cause the reduction of the Chroma level.

3.3.4 Video setting

Press to highlight the menu option:

, then press

to enter.

- LCD brightness, contrast and color saturation can be adjusted.
- The CCTV tester auto displays the format (PAL/NTSC) of the video input, and analyses the input video signal level.
- The Video Level should be within the indicated range. Any levels that are too low will result in a dim picture with a reduced dynamic range. A video level that is too high will result in a washed out image with decreased levels of visual clarity.

Depending on the type of camera connected to the CCTV tester, the Video “Format” will automatically change between NTSC and PAL, and the Video Level will automatically change between IRE (Institute of Radio Engineers) and mV. NTSC signals measured in IRE units, PAL signals measured in mV.

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3.3.5 PTZ address search

1. Press ◁▷ to highlight the menu option: SEARCH , then press F1/W 2/T 3/E to enter.

Note：Please isolate the PTZ camera from other PTZ cameras before performing the search. Otherwise all the PTZ cameras connected to the same system will pan at the same time.

If you cannot see the 'PTZ aadress search option in the main OEM menu you will need to Press ◁▷ to select: SET , and then press F1/W 2/T 3/E to enter options list (see images below). Select "Address search" by pressing ◁▷ to select ON or OFF, then Press F1/W 2/T 3/E to save. The PTZ address search function SEARCH displays in the main menu.

(Note：This function need to reset after each time it is turned off.)

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2. Press key to set the protocol, communication port, communication rate, make them the same as PTZ camera.
3. Press button, the tester will search up the ID quickly and continuously. When the ID is searched, the PTZ camera will pan right. At this time, please press to stop searching up.
4. Press the key (this is the manual single-step decreasing button) the tester will search for the ID step by step procedure. Whilst the ID is being searched for the PTZ camera will stop panning.
5. Press button, the tester will search for the ID quickly and continuously. Whilst the ID is searched, the PTZ camera will pan left. At this time, please press to stop searching up. Press the manual single-step incremental button，the tester will search up the ID step by step. When the ID is searched, the PTZ camera will stop panning.

Manual search address: Press or to search the address gradually, the image will flash when the address is found. Press the direction control buttons to adjust the Speed Dome Camera. Press button to quit.

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3.3.6 10x zoom image display and Video out

While video input, press to use the 10x zoom function, and press the button to zoom in the image, press to zoom out the image. Press to see the details. Press to quit. Set image 10x zoom, can view and display the local details by 1x、2x、3x、4x、5x、6x -10X zoom in the monitor and tester.

3.3.7 Photograph

While the Video-In is used, Press the key to save the current video frame on to the SD card as JPEG file. Set and save the date of stored image so that you are able to easily search for it on the file list. The tester automatically checks whether there is an SD card installed before taking the photograph. If there is no SD card, it will display “No SD Card” on the screen.

3.3.8 Video record

While the Video-In is used, press the key for several seconds, the icon will flicker on and off on the top left, means the video record is working and saving the video onto the SD card as an **AVI format**. Press again and the flicker icons will disappear and stop recording. Set and save the date of stored image so that you are able to easily search for it on the file list.

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3.3.9 Record playback

1. Press key to select the PLAY menu option, press to enter. The latest photograph or recorded video file will display on the screen.

2. As the picture above, the photograph file with the icon , and the video record file with the icon will appear on the top right corner. Press to start and stop video playback and, press to quit. See the above image, the 3/0008 in the image represents a total of 8 screenshots or video files, whilst the '3' represents what image, out of the image list, is currently being shown on the screen. Press to quit the latest storage image,
3. Press to choose the files.
4. Then press to be shown all of the storage files. Press to choose the files. Press to enter the files, press to choose the image.

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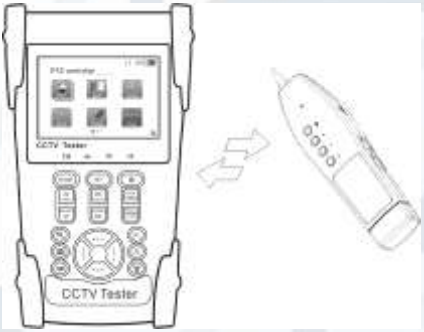
3.3.10 Cable Scan (not available of the TEST-009 model)

1. Connect the cable to the UTP port or the CABLE SCAN (VIDEO OUT) port on the top of the tester.
2. Press to select , then press to enter, press to choose the audio type.

3. Turn on the cable scan; use the copper pin to search. The cable with loudest sound means that it is connected with the tester. You can choose up to four audio types. Press the buttons (+ -) to adjust the volume, use two batteries (size AAA).



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While searching for correct BNC cable, connect one of the alligator clips to the copper core or the copper net of the BNC cable and the other one connected to the earth wire.

Note：The battery of the wire tracer must correspond to the positive pole + and negative pole -, or you will damage the tester.

Note：Whilst receiving the audio signal from the tester, interference from other signals will create extra noise and disturb the signal.

3.3.11 PING Test

1. Connect the cable to the LAN port, press the keys to select the menu option , and then press to enter.
2. Press either to adjust the IP address, Packet Size, Timeout, TTL, Count. Press to adjust the parameters.

3. If IP camera or other Ethernet equipment are not connected to the tester “Connect fail” will display on the screen. If the sending and receiving packet amount is 0, the success rate is 0%. Press to restart the Ping testing after the IP equipment is connected correctly. If the IP address is correct, the

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sending and receiving packet amount will be consistent and the success rate will be 100%.

Application

PING testing is the most conventional of network debugging tools. It is used for testing to see if the connected IP camera or other network equipment's Ethernet port is working normally and the IP address is correct. It is normal that the first data packet will be lost when you start the PING test.

3.3.12 Cable tester

1. Press the keys to select the menu option, press to enter.

2. Test LAN cable or telephone cable.

3. Connect LAN cable or telephone cable to the CCTV tester and cable tester. The connecting status, cable type and the sequence of wires will be displayed, as well as the serial number of the cable tester kit.

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3.3.13 Port flicker

Press the keys to select PORT menu option, and then press F1/9 to enter. Press F1/9 to start, the tester will send a signal to the connected PoE port to make it flicker at special frequency. This will enable the installers to easily and quickly find the connected Ethernet cable. This function can prevent mistakenly inserting or disconnecting non-corresponding cables that could artificially interrupt network connections. Press F1/9 to stop, and press Return/0 to quit.

If the tester and PoE port are not connected correctly there will not be any change on the PoE port.

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3.3.14 Link monitor

Press the keys to select the menu option, and then press to enter.

Add the IP address, then make sure the network segment and the setting IP address are consistent. The new IP address must not be occupied; otherwise it will cause IP conflicts and stop the equipment normal working. Link monitor can check if the new setting IP address is occupied. Choose “start”, and press to link to the monitor. If the status is “√” it means the IP address is occupied, if the status is“×”, it means the IP address is available.

3.3.15 IP address scan

Connect the cable to the LAN port, press the keys to select menu option, press to enter. Press to “Set IP”, press the keys to set the local IP address, the network segment and the network devices must be consistent. After setting, move the cursor to “Start”, press to scan the IP camera or for other network equipment addresses.

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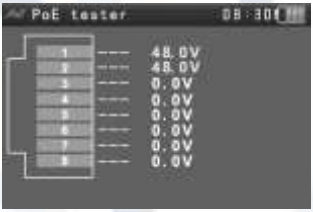
3.3.16 POE tester

Press the keys to select the menu option, and then press to enter. Connect the cable to the power supply equipment's POE port and the tester's PSE IN port. Connect IP camera or wireless AP equipment connect tester's LAN port, the POE voltage and the cable's pin connection status will be shown on the screen (see image below).



Note： the POE power supply equipment (POE Switch, PSE power supply equipment) must be connected to the PSE IN port. The powered device such as IP camera or wireless AP must be connected to the LAN port, then it will measure the voltage correctly.

Please do not connect POE power supply port to the UTP/SCAN port; otherwise it will damage the tester.

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3.3.17 Digital Multimeter (not available on the TEST-009 model)

To press the keys to select the menu option, press to enter

1. Function Button：

: Auto range : Data hold : Relative measuring

: Function select : Manual range

2. SYMBOLS：

U ： DC Voltage Measuring

U~：AC Voltage Measuring

A ： DC Current Measuring

A~：AC Current Measuring

Ω ： Resistance Measuring

： Continuity Testing

： Diode Testing

： Capacitance Measuring

DISPLAY NOTE	DESCRIPTION
AC/DC	Voltage and current measurement state display
Auto- range	The Multimeter auto adjusts the range via the input signal or tested components
Data hold	Hold data
Relative measurement	Display the relative measurement value Press the key to change display state
10A socket	In 10A current measurement state ,indicate use 10A socket
Over range	The current measurement value over the range, if in the Auto range state, to switch Auto.

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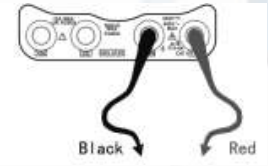
4. Digital Multimeter (not available for the TEST-009 model)

4.1 DC Voltage Measuring

WARNING!
You cannot input a voltage that is more than 660V DC. It is possible to input a slightly higher voltage, but it may destroy the inner circuits.

Please pay attention so that you do not get an electric shock when measuring high voltage.



1. Connect the black test lead to the “COM” jack and the red test lead to the “V/Ω” jack.
2. Press the keys to select **U**, and enter the DC voltage measurement.
3. Auto range by pressing the key and manual range by press

Manual range: 0.000V → 6.600V range
00.00V → 66.00V range
000.0V → 660.0V range
000.0mV → 660.0mV range

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4.2 AC Voltage Measuring

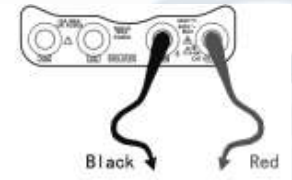
WARNING!

You cannot input a voltage that is more than 660V AC. It is possible to input a slightly higher voltage, but it may destroy the inner circuits.

Please pay attention so that you do not get an electric shock when measuring high voltage.

1. Connect the black test lead to the “COM” jack and the red test lead to the “V/Ω” jack.
2. Press the keys to select $\tilde{U}$ and enter the AC voltage measurement. Auto range by press key and manual range by pressing the keys.

Manual range： 0.000V → 6.600V range
00.00V → 66.00V range
000.0V → 660.0V range
000.0mV → 660.0mV range



4.3 DC Current Measuring

WARNING!

Shut down the tested circuit’s power before connecting the meter with the circuit to take measurements.

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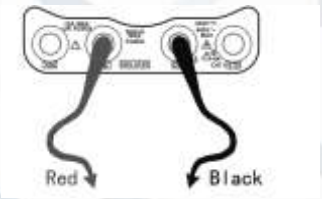
1. Connect the black test lead to the “COM” jack and the red test lead to the “mA” jack for a maximum of 660mA current. For a maximum of 10A, move the red lead to the 10A jack.
2. Press the keys to select **A** and enter the DC current measurement. Set the manual range by pressing keys, only manual range will be supplied.

   Manuel range： 0.000mA → 6.6mA range
   00.00mA → 66.00mA range 000.0mA → 660.0mA range
   00.00A → 10.00A range（use 10A socket）

3. Connect test leads in series with the load whilst taking the measurement.
4. You can get reading results from the LCD screen.



NOTE:

- When only the figure “**OL**” is displayed, it indicates “over range situation” and the higher range has to be selected.
- When you want to measure the value scale and the value is not known beforehand, set the range selector to the highest position.
- The maximum current of the mA socket is 660mA, going over this current amount will destroy the fuse, and will damage the meter.
- **The maximum current of the 10A socket is 10A, going over this current amount will destroy the meter, and may cause the operator to receive an electrical injury!**

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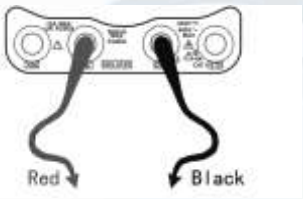
4.4 AC Current Measuring (Manual only range)

WARNING!
Shut down the tested circuit's power before connecting the meter with the circuit to take measurements.

1. Connect the black test lead to the "COM" jack and the red test lead to the "mA" jack for a current that is no more than 660mA. For a maximum of 10A, move the red lead to the 10A jack.
2. Press the keys to select Ã' to enter the AC current measurement. Manually set the range by pressing only manual range supply.

   Manuel range: 0.000mA → 6.600mA range
   00.00mA → 66.00mA range
   000.0mA → 660.0mA range
   00.00A → 10.00A range（use 10A socket）
3. Connect test leads in series with the load under measurement.
4. You can now get a reading from the LCD monitor.



NOTE:

- When only the figure "**OL**" is displayed, it indicates "over range situation" and the higher range has to be selected.
- When you want to measure the value scale and the value is not known beforehand, set the range selector to the highest position.
- The maximum current of the mA socket is 660mA, going over this current amount will destroy the fuse, and will damage the meter.

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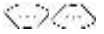
- **The maximum current of the 10A socket is 10A, going over this current amount will destroy the meter, and may cause the operator to receive an electrical injury!**
- In “AC” mode, you only can input “AC”, otherwise you will damage the meter.

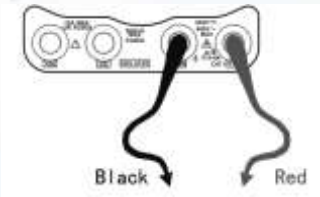
4.5 Resistance Measuring

WARNING!
When measuring in-circuit resistance, be sure the circuit being tested has all the power removed and that all capacitors have been discharged fully.

1. Connect the black test lead to the “COM” jack and the red test lead to the “V/Ω” jack.
2. Press the keys to select **Ω** and enter the Ω measurement. Select the Auto range by pressing the keys, and manual set the range by pressing the  keys.

   Manual range: (Connect the red lead to black leads, will display the measure range)

   000.0Ω → 660Ω range
   0.0 KΩ → 6.600KΩ range
   00.0 KΩ → 66.00KΩ range
   00 KΩ → 660.0KΩ range
   0.0 MΩ → 6.600MΩ range
   00.0 MΩ → 66.00MΩ range



3. Connect the test leads across the resistance when taking measurements.

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4. You can get reading from LCD.

NOTE:

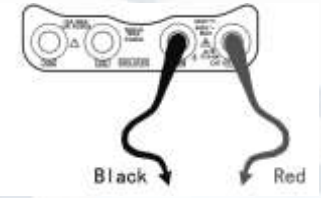
When only the figure "**OL**" is displayed, it indicates "over range situation" and a higher range has to be selected.

4.6 Continuity Testing

WARNING!

When measuring in-circuit resistance, be sure the circuit being tested has all the power removed and that all capacitors have been discharged fully.

1. Connect the black test lead to the "COM" jack and the red test lead to the "V/Ω" jack.
2. Press the keys to select and enter the continuity test.
3. Connect test leads across the two points of the circuit when testing.



4. If continuity exists (e.g. resistance is less than about 50Ω), the built-in buzzer will sound.
5. You can get a reading from LCD.

4.7 Diode Testing

1. Connect the black test lead to the "COM" jack and the red test lead to the "V/Ω" jack. (the red lead anode "+")
2. Press the keys to select and enter the diode testing.
3. Connect the red test lead across to the anode, the black lead to the cathode of the diode to test.

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4. Connect the red test lead across to the cathode, the black lead to the anode of the diode to test.
5. When during testing the diode's forward voltage is as low as 30mv，the tester will sound an indication alert, then you can finish the testing quickly without viewing the screen.
6. The capacitance of a capacitor should be tested separately, should not test in the installation of circuit.

4.8 Capacitance Measuring

WARNING!
When measuring in-circuit resistance, be sure the circuit being tested has all the power removed and that all capacitors have been discharged fully.

1. Connect the black test lead to the "COM" jack and the red test lead to the "V/Ω" jack.
2. Press the keys to select and enter the capacitance measurement.
3. Auto range by pressing the key and pressing the keys for the manual range.

Manual range:

0.000nF	→	6.600nF	range
00.00nF	→	66.00nF	range
000.0nF	→	660.0nF	range
0.000uF	→	6.600μF	range
00.00uF	→	66.00μF	range
000.0uF	→	660.0μF	range
0.000mF	→	6.600mF	range
00.00mF	→	66.00mF	range

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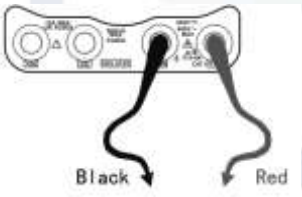
4. Before connecting the test leads across the two sides of the capacitor to perform the measurement, be sure that the capacitor has been fully discharged.
5. You will be able to get a reading from the LCD.



Note:

- The capacitance of a capacitor should be tested separately. You should not test capacitance within the installation of circuit.
- To avoid electric shocks, be sure the capacitors have been fully discharged before measuring the capacitance of a capacitor.
- While testing the capacitance of a capacitor at 660uF, the Max time is 6.6 seconds. If the capacitor is leaked or damaged, the data cannot be read. The tester will run normal operations after disconnecting the capacitor.

4.8.1 Manual and Auto range

Press the key to change the value, press the key to start Auto measurement.

Data hold

Press the key to hold the data, the value is green. Press it again to quit.

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4.8.2 Relative value measurement

Press the Rel key and the tester will Auto-save the data. The tester will display the new measurement and the relative value in a red. Press it again to quit

When the hold function and the relative values are combined for use at the same time, the value will be displayed in yellow.

The meter protection

- **Voltage protection:** You cannot input a voltage that is more than 660V AC, it is possible to show higher voltage, but it's may destroy the internal circuit.
- **Resistance, Continuity, Diode, PTC component Protection:** inputting the wrong voltage will cause the tester to go into the auto enter protection state. It is only suitable for short and work with a limited time frame. If the input voltage over 600V, the meter will be damaged.
- **mA current fuse range: 250V 1A:** if the current goes over the rated range, the fuse will melt to protect the meter. Please use the same type when changing the fuse (opens the battery cover to change).

⚠ **Note: Using the wrong 10A socket to measure the voltage, will cause damage the meter.**

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4.9 TDR Tester (only available on the TEST-011 and TEST-012 models)

Note：The testing cable cannot be connected to any equipment; otherwise it will damage the tester.

Connect Alligator clip cable to the TDR port, and the cable must connect well before testing, or it will influence the accuracy.

Press the keys to select the TDR menu option, press F1/OK to enter.

The built-in BNC, network cable, RVV control cable and Telephone line can be tested. Up to 12 groups of user-defined cable can be set.

Press SET to line type interface, press the keys to choose the line type, press F1/OK to save and start testing.

Press the keys to adjust the speed, if you need to select the user-defined cable type, adjust the speed after the calibration.

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User-defined calibration： choose the cable that spans between 100 to 200 meters (more than 50 meters) and press SET to set the user-defined calibration. Press to select user 1 to calibrate, there are 12 groups user-defined can be set.

Press the keys to “Adjust” and press F1/W to set cable type, press the keys to choose the cable style, press the keys to select “Speed” and press the keys to adjust. While the display length is the same as the actual length, press F1/W to save. It can be used for the same cable after the calibration.

Application：

The disconnection and short circuit display in the tester, it is more convenient and efficient to repair the faulty cable.

Note: the TDR reflected signal could be affected by the cable quality/bad connection and ca cause an inaccurate TDR measurement. The TDR measurement is for reference only.

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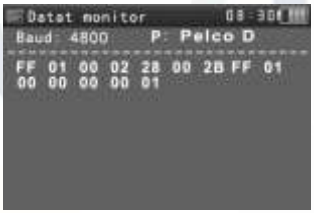
4.10 Data monitor

1. Press the keys to select the DATA menu option then press to enter.



2. Press the keys to choose the baud rate of the RS485/RS232; it must be the same as the DVR or the Control keyboard.
3. The DVR or Control keyboard will send the code to the tester, if it can be read, the protocol will be shown on the upper right of the display, e.g. Pelco D will be shown, if it is not quite like that it may look like this: **P:---**
4. Press to empty content while the tester receives the code.
5. Through the RS485 port, it will display the PTZ control code of the multifunctional keyboard or the DVR. The Controller can check the status of the RS485 transmission through the code on the display. (The RS485 communication rate must be the same.)

Application：Check the RS485 communication states of the video optical transmitter to see whether they are normal. The Engineer can analyse the protocol and check the data through the displayed code.

4.11 Time setting

Press the keys to highlight the TIME menu option and press to enter.

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Note：Press to set the time parameter, press to save. Users need to set the time first, as to make sure the time of the photograph and video record is the same as the time setting.

4.12 Device setting

1. Press the keys to find menu option and press to enter.

2. Press or to choose the item, press the keys to adjust, press to save then press to quit.

Auto power off: Setting the time of auto shut-down (disable,5,10,…,60).

Disable: Disable the “Auto power off” function. 5 means that the CCTV will power off after 5 minutes when there is no any operation.

Keypad tone: turn the beep of pressing keypad off or on.

Language： ENGLISH/ CHINESE and other languages

Brightness: Setting the brightness of OSD menu and background.(0~7)

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Address search: off / on Open or close the PTZ address search Menu.

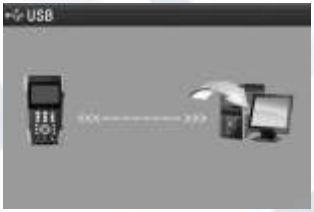
Restore factory setting: restore the data of the factory.

F1 user-defined keyboard shortcuts: Users can set the function as you like, press to select and then press to save. The default value is “PTZ controller”.

F2 user-defined shortcut key is the same setting of the F1 shortcuts keys. The default is “Device setting”.

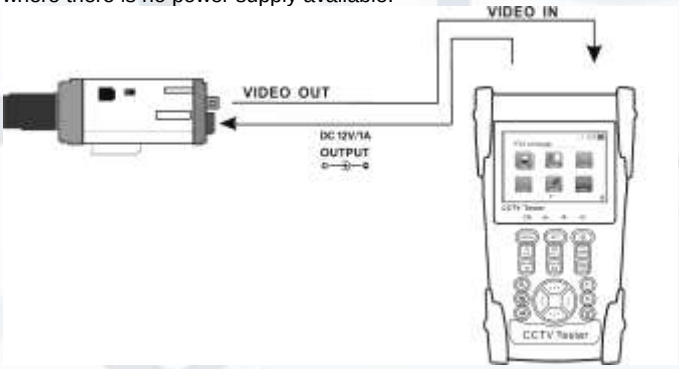
4.13 USB

All the photograph files or video record can be uploaded to computer, it’s convenient to check this function out.



4.14 DC12V 1A power output

Power the camera with DC12V (1A) power output from the tester. It is helpful for demo and testing where there is no power supply available.



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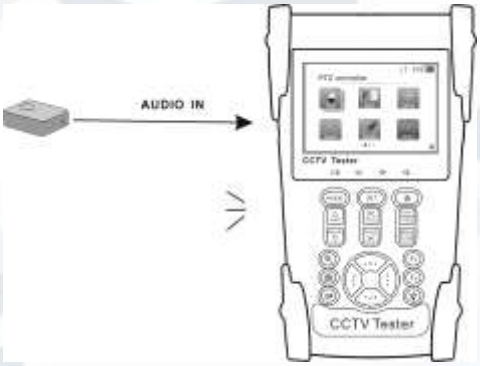
Notice:

a. **Don't input any power into the "DC12/1A OUTPUT" port of the CCTV tester to avoid damaging the device.**
b. **Don't output DC12V/1A power to the power input port of the CCTV tester to avoid damaging the device.**
c. **When the requirement of the camera is higher than 1A, the CCTV tester will enter protection mode. Disconnect all the connections of the CCTV tester and then connect the CCTV tester with power adaptor to resume the CCTV test.**
d. **Make sure the tester is full charged or more than 3 bars, or it will be short circuit.**

4.15 Audio input test

Test the audio input from pickup devices. Connect the tester and pickup device with the audio cable.



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4.16 LED torch

The LED torch can work in the evening or in the dark.

Turn on the tester, press for several seconds, and the LED torch will turn on, press to turn it off.

Note: Laser is harmful; you must protect your eyes. When the LED Light is working, please do not let your eyes be exposed to laser.

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5 Specifications

5.1 General Specifications

Video Test	
Signal mode	NTSC/PAL (Auto adapt)
Display	3.5 inch digital TFT-LCD ,480（RGB）x 320 resolution
LCD adjustment	Brightness, Contrast, Saturation adjustable
Video IN/OUT	1 channel BNC Input & 1 channel Output
Video Output Mode	1.0 Vp-p
Video Level test	
Level test	Video signals measured in IRE or mV
Video Level meter (optional)	
Video Level meter	PEAK video signal level, SYNC signal level, COLOR BURST Chroma level measurement
PTZ controller	
Communication	Support RS232 and RS485
PTZ Protocol	Compatible with more than 30 protocols such as PELCO-D/P, Samsung, Panasonic, Lilin, Yaan, etc.
Baud Rate	600，1200，2400，4800，9600，19200,57600,115200bps
Video Signal Generation	
Color bar generator	Output one channel PAL/NTSC color bar video signal to test monitor or video cable.(red, green ,blue, white and black color)
UTP Cable tester	
UTP cable test	Test UTP cable connection status and display in the screen. Read the number of the test box.
DC12V 1A power output	
DC12V power output	Output DC12V1A power for camera

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Audio input test	
Audio input test	test the pickup and other audio equipments on the front-end
RS485 data analysis	
Data Monitor	Captures and analyzes the command data from controlling device
10x Zoom Image	
Image 10x zoom	10x zoom image display and video out
Photograph、Video record, Record playback	
Photograph	snapshot and save the current image as JPG file
Video record	Video record and storage the file
Record playback	To view the storage file in the SD card
Port flicker	
Port flicker	Find the connected POE port quickly.
IP scan、Link monitor、PING test	
IP scan	Find out the connected IP camera or the other network equipment IP address quickly.
Link monitor	Check the IP address whether is occupied
PING testing	Test IP camera or Ethernet port of the other network equipment to check whether they work normally, also checks the IP address
Cable scan	
Cable scan	Search the cable using the audio signal
PoE tester	
PoE tester	Display the power supply voltage and cable connection states
Digital Multimeter	
AC/DC Voltage	0-660V auto/manual range, the min resolution is 0.1mV
AC/DC current	660.0uA , 6.600mA, 66.00mA , 660.0mA, 10.00A
Resistance	660.0Ω, 6.600kΩ, 66.00kΩ, 660.0kΩ, 6.600MΩ, 66.00MΩ
Capacitance	6.6nf～66000uF， the min resolution is 1pf
Diode	0～2V forward voltage, the min resolution is 1mV

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Data hold	Hold and display the measured value
Relative measurement	Displays the relative power value
Continuity testing	Built-in buzzer will sound, if resistance is lower than 50 Ω
Testing speed	3 times/ seconds
Data range	-6600～+6600
Visual fault locator	
Visual fault locator	Test fiber's bending and breakage (SM and MM fiber)
TDR Tester	
TDR Tester	Breakpoint and short circuit measurement (BNC cable, telephone cable)
POWER	
Power Adapter	DC 5V（1.5A）
Battery	Built-in 3.7V Lithium polymer battery ,3000mAh
Rechargeable	After charging 3-4 hours the working time lasts 11 hours
Low Consumption	Energy saving technology, the battery icon real-time display
Parameter	
Operation setting	English/Chinese and other languages OSD menu
Auto off	5-60 (mins)
Keytone	On/Off
General	
Working Temperature	-10℃ ～+50℃
Working Humidity	30%～ 90%
Dimension/Weight	194mm x 112mm x 48mm / 540g

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5.2 Multimeter specifications:

Counts：-6600～+6600

Conversion rate: 3 times/s

Current modes for clamp meter with ZERO function

Isolation: the Multimeter connector must be isolated with the other connector.

DC Voltage

Range	Accuracy	Resolution
660mV (Manual range)	±（0.3%+4）	0.1mV
6.600V		1mV
66.00V		10mV
660.0V		100mV

AC Voltage

Range	Accuracy	Resolution
660.0mV (Manual range)	±（1.5%+6）	0.1mV
6.600V	±（0.8%+6）	1mV
66.00V		10mV
660.0V		100mV

DC Current

Range	Accuracy	Resolution
6.600mA	±（0.5%+3）	1uA
66.00mA		10uA
660.0mA		100uA
10.00A	±（1%+5）	10mA

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AC Current

Range	Accuracy	Resolution
6.600mA	±（0.5%+3）	1uA
66.00mA		10uA
660.0mA		100uA
10.00A	±（1%+5）	10mA

Resistance

Range	Accuracy	Resolution
660.0Ω	±（0.8%+5）	0.1Ω
6.600KΩ	±（0.8%+2）	1Ω
66.00KΩ		10Ω
660.0KΩ		100Ω
6.600MΩ		1KΩ
66MΩ	±（1.2%+5）	10KΩ

Continuity

Range	Resolution	Function
660.0Ω	0.1Ω	The measurement value less 30Ω±3Ω,the tester will sound

Diode

Range	Resolution	Function
2.0V	1mV	Schottky diode：0.15~0.25V rectifier diode：0.6~1.0V triode PN junction:0.5~0.8V

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Capacitance

Range	Accuracy	Resolution
6.600nF	±（0.5%+20）	1pF
66.00nF	±（3.5%+8）	10pF
660.0nF		100pF
6.600μF		1nF
66.00μF		10nF
660.0μF	±（5%+8）	100nF
6.600mF		1μF
66.00mF		10μF

5.3 Optical power meter specifications

Measure Range(dBm)	-70～+10dBm
Wavelength(nm)	850nm、1300nm、1310nm、1490nm、1550nm、1625nm
Detector	InGaAs
Uncertainly	＜±3%dB(-10dBm，22℃) ＜±5%dB(full range，22℃)
Display Resolution	Linear：0.1% ；Nonlinear：0.01dBm
Operating Temperature(℃)	-10～+50
Storage Temperature (℃)	-20～+70
Connector type	FC/PC

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